

The Global Change Air Quality Assessment:

**A collaborative, cross-laboratory effort
to evaluate future air quality**

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U. S. EPA Science Forum, Washington, D.C., May 18th, 2005

EPA ORD Global Change Air Quality Assessment

ORD Cross-Laboratory Effort:

- **NCEA** (synthesis and coordination)
 - Anne Grambsch
- **NERL** (meteorology, emissions, and air quality modeling)
 - Alice Gilliland, Bill Benjey, Ellen Cooter, Robert Gilliam, Jenise Swall
- **NRMRL** (developing technology change and emissions scenarios)
 - Joseph Decarolis, Cynthia Gage, Chris Geron, Tim Johnson, Dan Loughlin, Carol Shay, Sonia Yeh, Elizabeth Wilson
- **NCER** (link to academic research community – STAR awards)
 - Darrell Winner



Primary Goal

- Support the US Global Change Research Program
 - 13 Federal agencies (EPA, DOE, NASA, Depts of Commerce, Interior, etc)
- EPA's Role: Assess the impacts of global change on future year (e.g., 2050) *ambient air quality*
- Considering influence of factors such as:
 - Population growth and redistribution
 - Economic growth
 - Land use change
 - Resource constraints
 - Technology and fuel use changes
 - Climate changes (temperature, precipitation, solar isolation)
 - Current and expected national, regional, and state actions



Additional Goals

- Serve as a “Learning laboratory” for EPA Modeling
 - Modeling air quality to 2050 is new territory for EPA
 - Assess and improve state-of-the-art methods and tools in meteorological, emissions, land use, air quality, and integrated modeling
 - Explore and demonstrate approaches for linking models into integrated modeling systems
- Develop tools that will assist EPA, regional, state, and local decision-makers
 - Assess options for reducing future ambient pollutant concentrations
 - Identify robust approaches for adaptation to global change

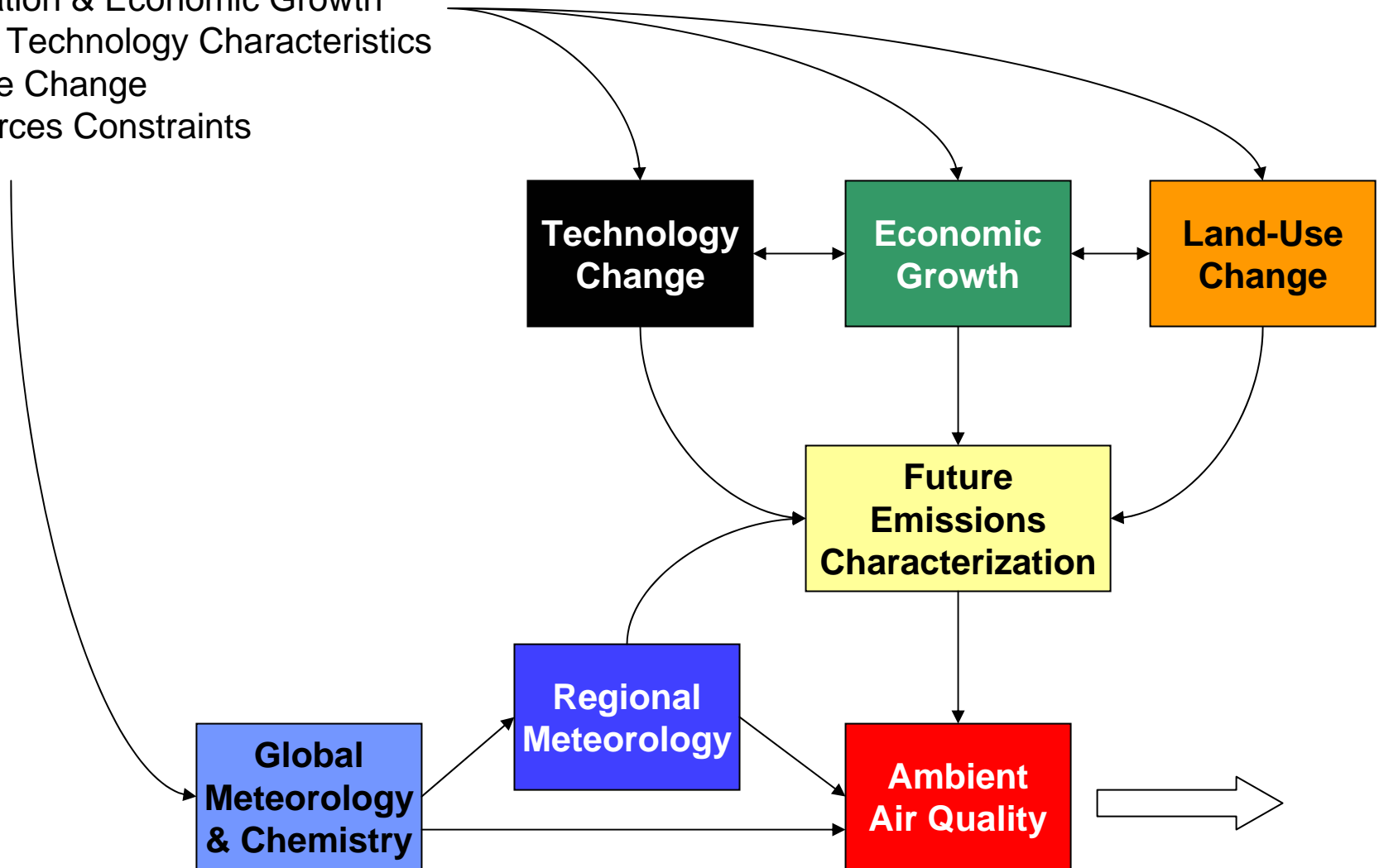


Modeling Process

Scenario

Assumptions

Population & Economic Growth
Future Technology Characteristics
Climate Change
Resources Constraints

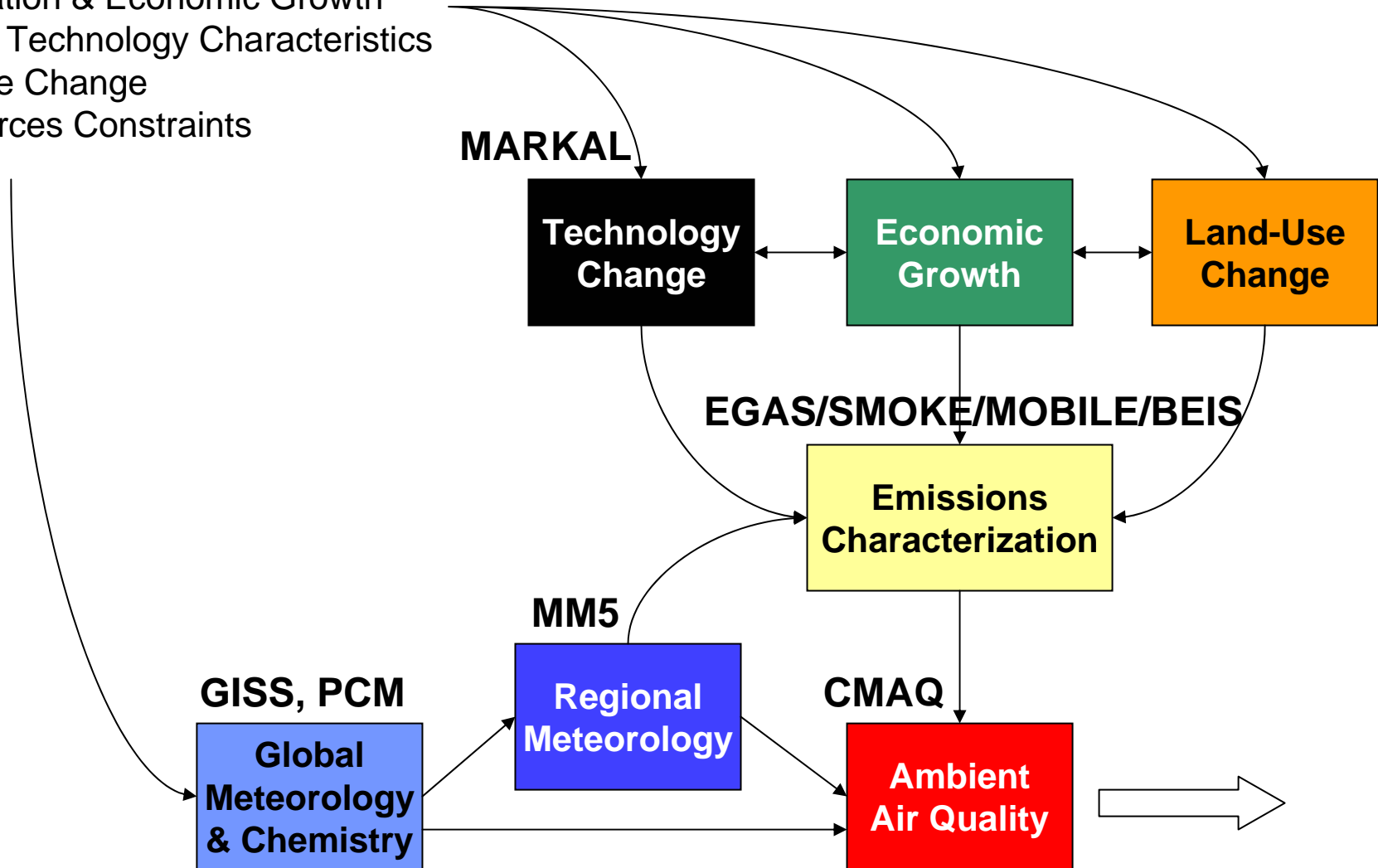


Modeling Framework

Scenario

Assumptions

Population & Economic Growth
Future Technology Characteristics
Climate Change
Resources Constraints



RESEARCH & DEVELOPMENT

Building a scientific foundation for sound environmental decisions

Clients and Outputs

- U.S. Global Change Research Program
 - Air Quality Assessment: Interim report: 2007, final: 2010
- U.S. EPA Office of Air and Radiation
 - OTAQ (vehicle fleet technology penetration scenarios)
 - OAQPS (integrated modeling tools: model linkage, sensitivity and uncertainty analysis capabilities)
 - OAP (repository of information on future technologies)
- Regions, States, and Local Agencies
 - Tools for assessing options for addressing long-term air quality concerns
 - E.g., NESCAUM and NE-MARKAL
- Others
 - DOE, energy modeling community

